

CLAIMS

1. A metal laminate comprising between two outer metal sheets an adhesive polymer layer, characterised in that the adhesive polymer layer comprises polyethylene cross-linked using an organosilane compound or a copolymer thereof, grafted with an unsaturated carboxylic acid and/or a derivative thereof.
2. Metal laminate according to claim 1, wherein the surface of the first outer metal sheet is greater than the surface of the second outer metal sheet.
3. Metal laminate according to claim 1 or 2, wherein the outer metal sheets are made of steel or aluminium.
4. Metal laminate according to any of claim 1 to 3, wherein the adhesive polymer layer comprises more than 50 % in weight of cross-linked grafted polyethylene.
5. Metal laminate according to claim 4, wherein the adhesive polymer layer comprises 80 to 95 % in weight of cross-linked grafted polyethylene.
6. Metal laminate according to any of claims 1 to 5, wherein the cross-linked polyethylene is grafted with an unsaturated carboxylic acid containing 1 to 6 carboxylic groups and/or a derivative thereof.
7. Metal laminate according to claim 6, wherein the cross-linked polyethylene is grafted with maleic acid and/or a derivative thereof.

8. Metal laminate according to claim 7, wherein the cross-linked polyethylene is grafted with maleic acid anhydride.

5 9. Metal laminate according to any of claims 1 to 8, wherein the adhesive polymer layer comprises 0 to 80 % in weight of high-density polyethylene.

10 10. Metal laminate according to claim 9, wherein the adhesive polymer layer comprises 50 to 80 % in weight of high-density polyethylene.

11. Metal laminate according to any of claims 1 to 10, wherein the adhesive polymer layer comprises 20 to 95 % in weight of elastomer.

15 12. Metal laminate according to claim 11, wherein the adhesive polymer layer comprises 20 to 45 % in weight of elastomer.

20 13. Metal laminate according to any of claims 1 to 12, wherein the adhesive polymer layer also comprises 0.5 to 10 % in weight of a copolymer of styrene and an unsaturated carboxylic acid and/or a derivative thereof.

14. Metal laminate according to claim 13, wherein the adhesive polymer layer comprises a styrene- maleic acid anhydride copolymer.

25 15. Metal laminate according to any of claims 1 to 14, wherein the adhesive polymer layer further comprises 0.1 to 5 % in weight of an epoxy resin.

16. Metal laminate according to any of claims 1 to 15, wherein the organosilane compound is chosen from vinylalcoxysilanes, dialcoxysilanes, trialcoxysilanes or tetraalcoxysilanes

5 17. Metal laminate according to any of claims 1 to 16, wherein the adhesive polymer layer further comprises a flame retardant agent.

18. Metal laminate according to any of claims 1 to 17, wherein the adhesive polymer has a gel content of at least 15 % in weight.

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19. Metal laminate according to claim 18, wherein the adhesive polymer has a gel content of at least 30 % in weight.

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20. Metal laminate according to any of claims 1 to 19, wherein the polymer layer comprises an intermediate layer of cross-linked non-grafted polyethylene.

21. Process for the manufacture of a metal laminate according to any of claims 1 to 20 comprising the steps consisting in :

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- a. Providing a first and a second metal sheet;
- b. Applying a polymer composition comprising polyethylene cross-linked using an organosilane compound grafted with an unsaturated carboxylic acid and/or a derivative thereof onto the first metal sheet;
- c. Applying the second metal sheet onto the polymer layer applied onto the first metal sheet to obtain a metal laminate; and
- d. Heating the metal laminate to complete the adhesion.

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22. Process according to claim 21, wherein the polymer composition is previously extruded to form a polymer film.
23. Process according to claim 21, wherein the polymer film is directly
5 extruded onto the first metal sheet.
24. Use of the metal laminate according to claims 1 to 20 for the manufacture of automotive body parts.